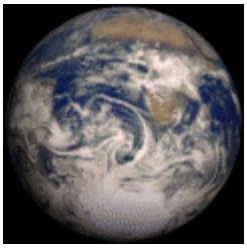
"Air--The Breath of Life"
Student Booklet

Lesson 1. Types and Causes of Air Pollution

The Atmosphere



Our planet is surrounded by a sea of gases we call the atmosphere. The Earth's atmosphere is made up of a number of layers. The layer closest to the Earth's surface is the troposphere. The air we breathe is part of that troposphere. Our air is made up of 78 percent nitrogen, 21 percent oxygen and a one percent mixture of carbon dioxide, water vapor and other gases. Unfortunately, pollutants are also in our air.

Daily weather conditions directly affect whether and how much we are exposed to pollutants in the air. Shifting air masses (weather systems) and wind can move pollutants from one place to another. On the other hand, stationary air systems can trap harmful pollutants over an area for days at a time. Rain, snow, and other forms of precipitation help wash pollutants from the air and onto the ground. While precipitation cleanses the air we breathe, it also may increase pollution of the land and surface water.

Natural air pollution, such as gases and particulate matter from volcanic eruptions and soot from forest fires has been around for millions of years. Man-made pollution can be defined as "something produced by humans that interferes with our well-being." Air pollution has become a much greater problem in the last century as the number of people and their use of fossil fuels (like oil and gasoline) has increased. This is especially true in large cities where the kinds of activities people engage in may have a detrimental effect on their environment.

What are the pollutants that affect air quality? Where do they come from?

A primary source of air pollution is transportation, or mobile sources. When was the last time you were in a traffic jam? While you crept along, your vehicle and those around you produced air pollutants.

Air pollutants are also released into the environment by large industries such as power and manufacturing plants. Power plants depend heavily on the use fossil fuels to generate electricity. In the Austin area, air pollution from industry is not as great as in some other cities such as Houston and Corpus Christi. Moreover, some of Austin's energy demand is met by wind power from windmill "farms" in west Texas.

But air pollution is still a concern in Austin. When air pollution is mentioned, some people think of smog. In fact, smog is a combination of water vapor and a variety

of air pollutants that may include smoke, dust, and /or gaseous pollutants such as ozone.

The ***Big, Bad Six*** *Pollutants*

The Environmental Protection Agency (EPA) has set national standards for six air pollutants that are considered the most damaging. These "Criteria Pollutants" are the most common, widespread pollutants shown by research to be harmful to human health and to general public welfare. These pollutants affect human health, crops, livestock, vegetation, buildings, and visibility. Most air pollutants come from burning fuels. Fuels are used to run factories, automobiles and power plants. Burning fuels such as wood, coal, oil, and gasoline release gases and particulate matter into the atmosphere. The criteria pollutants and their major sources are described below:

1. **Carbon Monoxide (CO)** is a colorless, odorless gas produced when organic materials (wood, coal, trash, gasoline, natural gas, and tobacco) are incompletely burned. The major source of carbon monoxide is motor vehicles. When inhaled, carbon monoxide reduces the blood's ability to deliver oxygen to vital tissues, affecting primarily the cardiovascular and nervous systems. Adverse effects range from headaches, reduced mental alertness, drowsiness and even death. Remember that burning tobacco is one source of carbon monoxide.

2. **Lead (Pb)** is a criteria pollutant because even in small quantities it can be toxic. Until a few years ago all cars used gasoline that had lead additives. When leaded gasoline is burned, lead is released into the air. In the United States most cars today use unleaded gasoline, however there is still much leaded gasoline being sold, and lead continues to be a major pollutant in many cities. Another source of lead is paint. Many older homes have paints that contain lead. Dust from flaking paint, remodeling or demolition is released into the atmosphere. Lead is highly toxic to humans, especially children, whose bodies are still developing. Even small amounts of lead can cause severe brain and organ damage. Lead can accumulate in living organisms, thus passing up the food chain through plants and animals.

3. **Nitrogen oxide (NO) and nitrogen dioxide (NO_2)** are gases that enter the air from vehicle exhaust and some power plants. These gases can combine with water to make acid rain, react in the air to produce ozone and are harmful by themselves. Nitrogen oxides can irritate the airways and increase one's susceptibility to viral infections and respiratory diseases. It can cause permanent lung damage. Chemical reactions with nitrogen oxides can contribute to production of acid rain and ozone.

4. **Ozone (O_3)** is sometimes referred to as a secondary air pollutant since it is formed during the interaction of nitrogen oxides, gaseous hydrocarbons, and sunlight. Hydrocarbons are either evaporated from fuel supplies or are remnants of fuel that did not burn completely. Automobiles are one of the greatest producers of the gases that react to produce ozone. This gas can cause breathing difficulty, permanent lung damage, eye irritation, may trigger asthma attacks, and reduce resistance to infection. It can also be harmful to vegetation and contribute to smog formation.

5. **Particulate matter** is small pieces of solid materials such as soot, dust, asbestos, ash and tiny droplets of water. Particulates are sent into the air primarily by burning of coal, petroleum products, and wood. Large amounts of particles in the air cause haze and can lower visibility. Vehicles emit particulate matter, which can cause higher pollution in populated areas. Particulate matter reduces the gas exchange between the blood and lungs, may cause permanent lung damage, and is irritating to the eyes and mucous membranes of the nose and throat. It can also damage crops, reduce visibility and discolor buildings and statues. Some particulates, such as asbestos, can be carcinogenic (causing cancer).

6. **Sulfur dioxide (SO_2)** is produced when sulfur-containing fossil fuels are burned. Power plants and factories that burn coal and oil for fuel emit sulfur dioxide. Sulfur dioxide can react with oxygen in the air to become sulfur trioxide, which then reacts with water in the air to form sulfuric acid, which falls to Earth as acid rain. Acid rain can hurt aquatic life, forests and the surfaces of buildings. SO_2 also increases the incidence and severity of various respiratory diseases and irritates the eyes.

Criteria pollutants are certainly not the only air pollutants. Air toxins are harmful chemicals that are released into the atmosphere on purpose or are released accidentally as a result of leaks or poorly designed manufacturing processes. Pesticide is one example of an air toxin.

Lesson 1. Independent Activities

1. Count and record the breaths you take in one minute. _____

   How many would that be in an hour?_____ A day?_____

2. What examples of air pollution have you noticed in the Austin area? List five or more sources of man-made air pollution.

3. Discuss air pollution with your parents or some other older adult. What changes have they noticed in their lifetime regarding air pollution?

4. Why is air pollution a greater problem today than when your parents or grandparents were children?

5. Using the information provided in “The Big, Bad Six Pollutants” section above, fill in the “Signs/Effects” column of Table 1 on the following page.

Table 1: The Criteria Air Pollutants

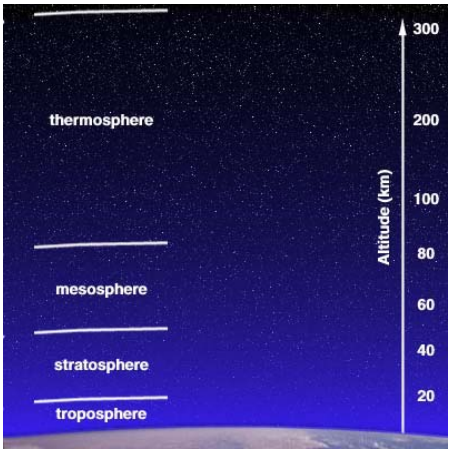
Pollutant	Description	Sources	Signs/Effects
Carbon monoxide (CO)	• colorless, odorless gas	• vehicles burning gasoline • indoor sources, including kerosene, wood-burning, natural gas, coal, or wood-burning stoves and heaters	• •
Lead (Pb)	• metallic element	• vehicles burning leaded gasoline • metal refineries	• •
Ozone (O3)	• gaseous pollutant	• vehicle exhaust and certain other fumes • formed from other air pollutants in the presence of sunlight	• • • •
Nitrogen oxides (NOx)	• gaseous compounds made up of nitrogen and oxygen	• vehicles • power plants burning fossil fuels • coal-burning stoves	• • • • •
Particulate matter	• very small particles of soot, dust, or other matter, including tiny droplets of liquids	• diesel engines • power plants • industries • windblown dust • wood stoves	• • • • •
Sulphur dioxide (SO2)	• gaseous compound made up of sulphur and oxygen	• coal-burning power plants and industries • coal-burning stoves • refineries	• • • • •

Lesson 2. The Ozone Layer, CFCs and Global Warming

Ozone: Good up High, Bad Down Below

We are familiar with the most common form of oxygen, the form that we all breathe. It is made up of two oxygen atoms (O_2). Ozone is made up of three oxygen atoms (O_3) and can be beneficial or harmful, depending on where it is found in the atmosphere.

Figure 2.1 – Atmospheric Layers

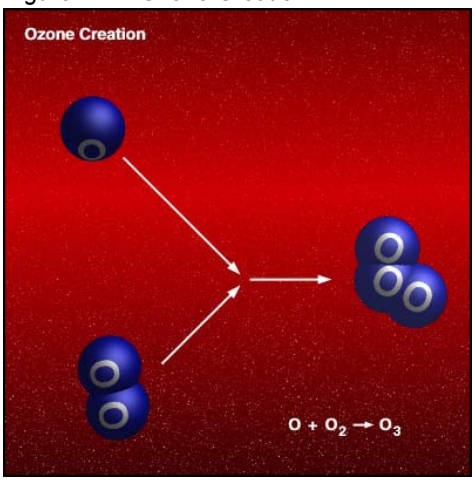


In the stratosphere, ozone protects us from ultraviolet radiation, so it is beneficial to human health. On the other hand, ground-level ozone is a pollutant, and as we learned in Lesson 1, is harmful to human health. Remember, the ozone chemical is the same, but where it is located determines if it is beneficial or a pollutant.

Stratospheric Ozone

As shown in the figure to the right, the stratosphere is the layer of atmosphere above the troposphere. The stratosphere contains a thin layer of ozone. The stratospheric ozone layer occurs naturally. It protects life on Earth by filtering out the sun's harmful ultraviolet radiation.

Figure 2.2 – Ozone Creation



Ozone gas (O_3) forms when oxygen molecules interact with ultraviolet rays from the sun. Ozone molecules absorb ultraviolet light and split into molecules of oxygen (O_2) and oxygen atoms (O). The ultraviolet light then splits some more of the O_2 to form more oxygen atoms. Oxygen atoms (O) combine with O_2 to create ozone, which is of course, O_3.

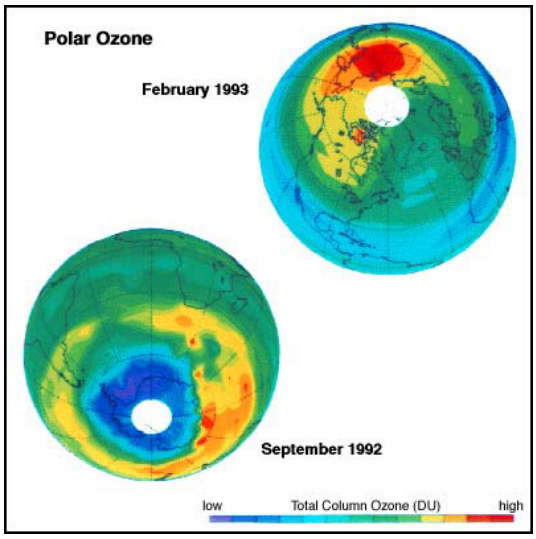
Under normal conditions this ozone layer is continuously being depleted and regenerated. UV light breaks down O_2 to single O atoms and then reforms to O_3 again and again. This process allows most of the ultraviolet light to be filtered out before it reaches the Earth. Ultraviolet light, or UV radiation, can cause skin cancer in humans.

Chlorofluorocarbons (CFCs)

Now humans have introduced chlorofluorocarbons (CFCs) to the atmosphere and the chlorine in CFCs reacts with the ozone and changes the whole process. CFCs were first introduced in the 1920s. They were very useful as coolants in air

conditioners and refrigerators, propellants for aerosol sprays, and agents used to produce plastic foam. The CFC molecules are very stable close to the Earth, but when they reach the stratosphere ultraviolet radiation breaks them up into their more-reactive components. These components then react with the ozone molecules breaking them apart, thus reducing the amount of available oxygen atoms necessary to form ozone. Before the chlorine is finally removed from the atmosphere (in one to two years by precipitation), each chlorine atom will have destroyed approximately 100,000 ozone molecules – exposing the Earth to more harmful ultraviolet rays.

Figure 2.3 – "Holes" in the Ozone Layer



The amount of ozone has been so depleted in some areas that scientists now refer to "holes" in the ozone. Look at the two globes at left. The lower globe shows the southern hemisphere and the bright blue portion of this globe is an area of very low ozone gas right over Antarctica. Depletion of the stratospheric ozone layer is of great concern since it protects the Earth's surface by absorbing 99 percent of the ultraviolet light energy coming from the sun.

Greenhouse Gases

Chlorofluorocarbons are also part of a group of chemicals known as greenhouse gases. These gases contribute to the greenhouse effect. The greenhouse effect is the rise in temperature that the Earth experiences because certain gases in the atmosphere (water vapor, carbon dioxide, nitrous oxide, and methane, for example) trap energy from the sun. Without these gases, heat would escape back into space and Earth's average temperature would be about 60ºF colder. Because of how they warm our world, these gases are referred to as greenhouse gases.

Greenhouse gases in the atmosphere behave much like the glass panes in a greenhouse. Sunlight enters the Earth's atmosphere, passing through the blanket of greenhouse gases. As it reaches the Earth's surface, land, water, and biosphere (all living things) absorb the sunlight's energy. Once absorbed, this energy is sent back into the atmosphere. Some of the energy passes back into space, but much of it remains trapped in the atmosphere by the greenhouse gases, causing our world to heat up.

Carbon dioxide is the most important greenhouse gas. It is not a CFC, but a gas that is very common on Earth. Trees and other plants use up carbon dioxide and give off oxygen. They also store carbon in their cells. Because plants help remove carbon dioxide from the air, they keep the amount of greenhouse gases stable. As more trees are destroyed to develop agriculture and cities, more carbon is available to act as a greenhouse gas, which speeds up the warming process.

This balancing act of greenhouse gases is important. Without the greenhouse effect, the Earth would not be warm enough for humans to live. But if the greenhouse effect becomes stronger, it could make the Earth warmer than usual. Even a little extra warming may cause problems for humans, plants, and animals.

TERMS

Chlorofluorocarbons (CFCs): a group of chemicals used for a wide variety of products such as aerosols and refrigerants.

Emissions: discharge form incomplete burning of fossil fuels, especially gasoline

Greenhouse effect: a rise in the Earth's temperature because certain gases in the atmosphere (water vapor, carbon dioxide, nitrous oxide, and methane, for example) trap energy from the sun.

Ozone: a colorless gas composed of three oxygen atoms.

Stratosphere: the layer of the atmosphere overlying the troposphere to about 30 miles (48 km) in altitude.

Volatile organic compounds (VOCs): chemical compounds made up of carbon, oxygen, hydrogen, and other atoms that can form gases easily. VOCs contribute to the formation of ground-level ozone.

Nonattainment areas: metropolitan areas that do not meet the standards set by the EPA for ground level ozone levels.

Lesson 2. Independent Activities

1. In the figure below, write in the name of the appropriate atmospheric level in the white blocks.

a. What kind of ozone is located in block 1, the part of the atmosphere that is around 20 to 50 kilometers above the Earth's surface?

_____

_____

b. Is ozone beneficial or harmful to humans here?

_____

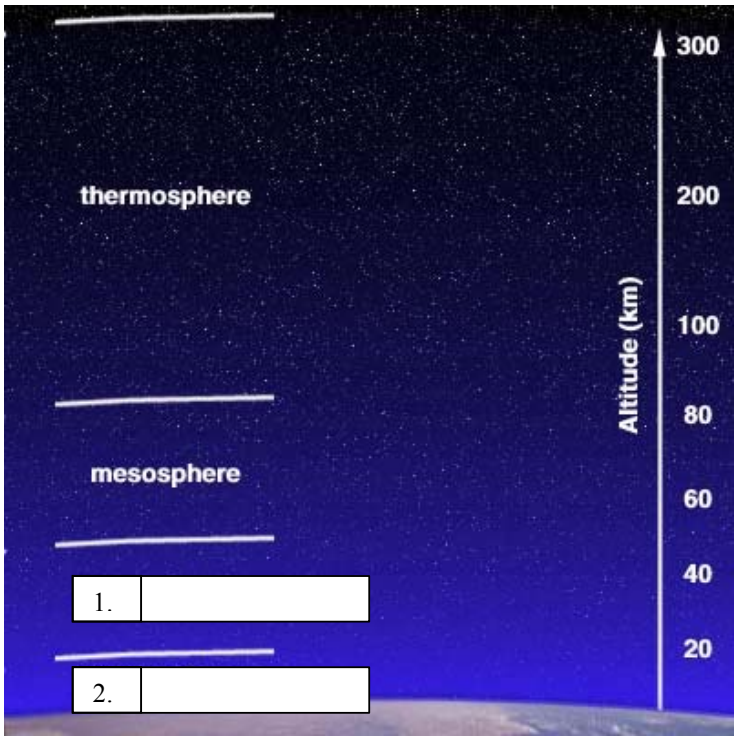
c. What kind of ozone is found in block 2, the part of the atmosphere closest to the Earth's surface?

_____

_____

d. Is ozone beneficial or harmful to humans here?

_____



2. How many oxygen atoms are in ozone? _____

3. What is the greenhouse effect? _____

_____

_____

_____

Lesson 3. Ground-Level Ozone in Austin

Ground-Level Ozone

While the stratospheric ozone layer is necessary to protect us from the sun's harmful ultraviolet radiation, ground-level ozone can be very harmful. It is the most pervasive air pollution problem in Texas and the United States. Ground-level ozone reaches from the ground to about 10 miles above the Earth. Ozone at this level is not a pollutant given off directly. It is a secondary pollutant formed as a result of chemical reactions between oxygen, volatile organic compounds (VOCs) and nitrogen oxides (NOx) in the presence of heat and sunlight. Increases in the number and use of motorized vehicles have contributed to a great increase in ozone precursors, those chemicals that contribute to ozone formation. Typically, ground-level ozone concentrations are highest in cities on hot, windless afternoons.

Volatile Organic Compounds (VOCs) + Nitrogen Oxides (NOx) + Sunlight + Weather = Ground-level Ozone (O_3)

EPA Standards

As we saw in Lesson 1, ground-level ozone can cause choking, coughing, and stinging eyes. It damages lung tissue, and aggravates such respiratory diseases as asthma and emphysema. It makes people more susceptible to infections. Ground level ozone can also be harmful to vegetation by destroying chlorophyll.

Because of ozone's harmful effects, the Environmental Protection Agency (EPA) has set standards or limits for ozone concentrations. The standards are based on how many ozone molecules are in a certain volume of air. This is expressed as the number of parts of ozone per billion parts of air. Think of one tiny drop of food coloring in a container of one billion drops of water. The food coloring is equivalent to ozone and the water is equivalent to air.

What is a part per billion?

Write "1 ppb" on the chalkboard, and next to it write the fraction:

$$\frac{1}{1{,}000{,}000{,}000}$$

Explain that "ppb" means "parts per billion" and is similar to "percent" in that "percent" means "parts per hundred." Explain that, like "percent," ppm has no units or dimensions (such as grams or cubic meters). Challenge the class to state which quantity is smaller, 1 ppb or 1 percent.

Source: EPA Project A.I.R.E.

The Clean Air Act has set two standards for ozone. These standards are called National Ambient Air Quality Standards (NAAQS). The NAAQS require that ozone levels cannot exceed 125 parts per billion (125ppb) during any one single hour. This is the 1-hour standard. There is also an 8-hour standard that requires ozone not be higher than 85 ppb averaged over eight consecutive hours. In metropolitan areas in Texas, ground level ozone is the air pollutant of major concern.

The "Nonattainment" Designation

The Texas Commission of Environmental Quality, or TCEQ, monitors and records hourly and daily ozone levels throughout the state. Several areas in Texas, including Austin, violate the national standards set by the Environmental Protection Agency for ozone. El Paso, Dallas-Fort Worth, Houston-Galveston, and Beaumont-Port Arthur have been designated "nonattainment" areas because they exceed allowable ozone levels. San Antonio, Corpus Christi, Tyler-Longview-Marshall and Austin are nearing this nonattainment designation.

What happens if a city is designated as nonattainment? Those areas that exceed the standards set by the EPA can be **required** to reduce pollutants. These could include mandatory automobile emission controls and restrictions on certain businesses. Federal funding for highways also can be restricted. Nonattainment areas are required to prepare a plan that shows how they are going to reduce emissions and clean up the air.

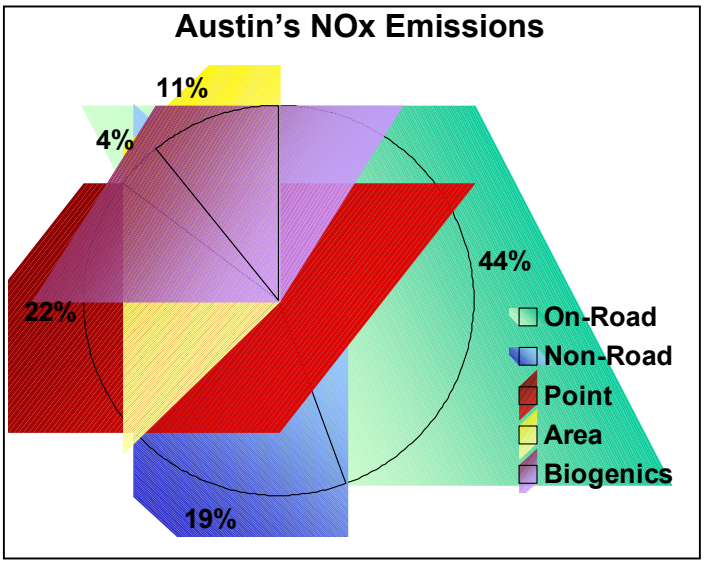
Austin's Ozone Problem

The population of the Austin metropolitan area has grown tremendously in the last ten years. From 1990 to 2000, the metropolitan area registered the fifth fastest growth rate in the nation. This area includes Travis, Williamson, Hays, Bastrop and Caldwell counties. More people and more automobiles create more ozone. Although the region has not exceeded the 1-hour standard since 1985, it has experienced violations of the 8-hour ozone standard every year since 1997.

Where does Austin's ozone pollution come from? Generally, air quality specialists group emissions from humans into four categories:

- **On-road mobile sources** -- cars, trucks, buses
- **Non-road mobile sources** – off-road recreational vehicles, jet skis, construction equipment
- **Point Sources –** large emitters like power plants and other industries
- **Area Sources --** smaller emitters like automotive shops and dry cleaners using VOC-based solvents**.**

As shown in this pie chart, almost half of Austin's NOx emissions come from on-road sources like cars and trucks. For many reasons, reductions in NOx are more effective in reducing ground-level ozone than reducing VOCs. These two statements underscore the importance of reducing on-road emissions to improve Austin's air quality. How can you reduce emissions from on-road sources? We will talk about this more in Chapter 4.



Ozone Action Days

In Texas, ozone formation tends to be highest from April 1 through October 1, with only occasional high ozone readings before May. When TCEQ meteorologists believe that weather conditions are right for the formation of high levels of ozone in a given metropolitan area they declare an Ozone Action Day. Local task forces then get the word out to citizens via television, radio, and Internet. This prediction alerts people to the possibility of ozone exceeding the standard that day and offers suggestions for reducing ozone-causing activities. What can you think of to help reduce ozone formation on these days?

Anthropogenic (man-made) Versus Biogenic (naturally occurring) Emissions.

While humans produce the majority of emissions on the planet, there are also naturally occurring emissions. These are called "biogenic" emission sources. Trees and vegetation create volatile organic compounds, which do contribute to ozone. But we would have considerably more pollution if we didn't have trees and other vegetation.

To learn more about trees and air pollution, visit: http://www.ghasp.org/publications/trees/tree_pollutionFAQs.html

TERMS

Environmental Protection Agency: a United States agency responsible for managing federal efforts to control air and water pollution and other environmental concerns

Metropolitan area: a large important city often surrounded by smaller communities

National Ambient Air Quality Standards (NAAQS): standards for six criteria air pollutants set by the Clean Air Act and enforced by EPA. Ground-level ozone has two standards, one for the 8-hour average (125 ppb) and one for the 1-hour peak concentration (85 ppb).

Nonattainment: A designation given to metropolitan areas that do not meet National Ambient Air Quality Standards

Ozone: a molecule of oxygen produced when sunlight stimulates a reaction between nitrogen oxide (NOx) and volatile organic compounds (VOCs).

TCEQ: Texas Commission on Environmental Quality

Lesson 3. Independent Activities

Using data from the Texas Commission on Environmental Quality (TCEQ) website, create a table showing ozone levels in Houston, Dallas-Fort Worth, and Austin. Your teacher will help you gather the data.

1. **Prepare data.** In the empty boxes below, write in the ozone reading for each area for September and February. Ozone levels from June 20, 2002 have already been added. Preparing your data will make it easier to chart it in the next step.

Ozone Readings in Texas (ppb)

	June 20, 2002	*September 13, 2002*	*February 24, 2003*
Houston-Galveston-Brazoria	**33**		
Dallas-Fort Worth	**56**		
Austin	**37**		
San Antonio	**49**		

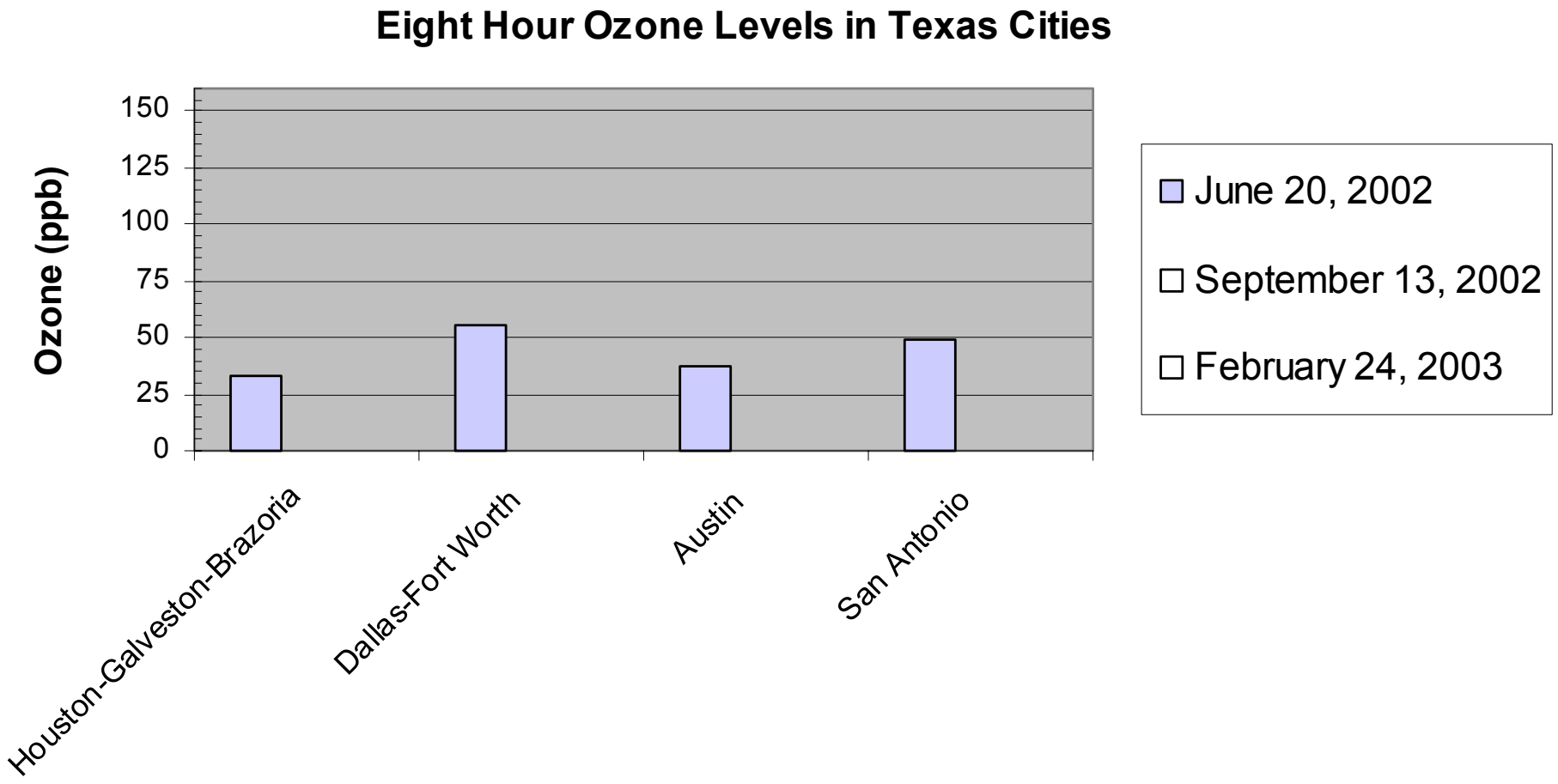
2. **Chart Data.** An empty chart has been started for you on the next page. Charts have two axes -- the x-axis is the horizontal line (left to right) and the y-axis is the vertical line (up and down). Your chart will show each city name along the x-axis and the ozone readings along the y-axis.

   Study the purple bar, which represents the June 20, 2002 data. Using the data entered above, draw another vertical bar for September to the right of the purple bar for Houston-Galveston-Bazoria. Don't worry about getting the bar drawn to the exact height. Repeat for each city. Use a pencil first and then fill in the bars with a color of your choice. Now, do the same for the February data for each city, but use a different color this time. You should have three different colors on the chart.

   Notice the legend at the right of the chart. There are two empty boxes to the left of September 13 and February 24. Using the same color pen or pencil as you used to make the vertical bar, fill in these boxes. This allows another person viewing your chart to know what date each bar represents!

3. Do you see any trends in the data? During which season(s) is ozone the worst? Which areas of the state have the highest ozone levels overall? Think about these questions and be prepared to answer in class.

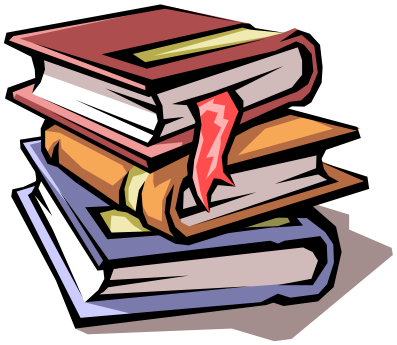
Name: _____


Eight Hour Ozone Levels in Texas Cities
Ozone (ppb)
150
125
100
75
50
25
0
Houston-Galveston-Brazoria
Dallas-Fort Worth
Austin
San Antonio
June 20, 2002
September 13, 2002
February 24, 2003

Lesson 4. What We Can Do to Reduce Air Pollution

As we've seen in the previous lessons, polluted air is damaging to the health of people, other animals and plants. Methods of controlling air pollution depend upon the type of pollutant and the willingness or ability of industries, governments, and individuals to make changes.

What is Government Doing?



In 1970, the U.S. Congress realized that polluted air was a critical problem and passed the Clean Air Act to protect public health. That same year, it created the Environmental Protection Agency (EPA). The Clean Air Act required the EPA to set air quality standards. The 1990 Clean Air Act Amendments added additional measures to protect against air pollution. In Texas, The Texas Commission on Environmental Quality (TCEQ) helps enforce these clean air standards.

Likewise, Austin is slowly realizing that polluted air is a problem here. In March 2002, the elected officials from the five-county Austin/San Marcos MSA signed the O_3 Flex Agreement. O_3 Flex commits signatories to measurable and quantifiable emission reductions through voluntary actions. The agreement with TCEQ and EPA is designed to help areas remain in compliance with the 1-hour federal ozone standard. Central Texas was first in the nation to make this voluntary commitment.

The O_3 Flex Agreement addresses only the 1-hour standard. Central Texas currently monitors attainment of this standard. To address the 8-hour standard, TCEQ and EPA developed the Early Action Compact (EAC) Protocol. Regions that choose the EAC must follow strict timelines for developing an emission reduction plan. Once adopted, the plan becomes law. In return for choosing legally enforceable early action, the region is given flexibility in crafting the plan and will reach cleaner air two years earlier than if it waited to be designated nonattainment by EPA and went through the traditional clean air planning process. This is all being done because Austin believes it will benefit everyone if plans are made to clean up the air sooner, rather than later.

What Can Individuals Do?

What can you do to help reduce air pollution? One of the most important changes to make is a change in attitude. Recognize that the air we breathe must be protected and that every little bit helps.

Reduce Vehicle Miles Traveled

In Lesson 3, we saw that a large proportion of air pollution comes from automobiles in Austin. Travel data from the 2000 census shows a doubling since 1994 in the number of hours the average driver has been delayed due to traffic congestion1. This is the largest increase of any medium sized city in the country. According to data from the Texas Transportation Institute, Austin also ties for the worst Travel Time Index in the country – at 1.7. This means that a 20-minute drive at off-peak hours would take 34 minutes at peak travel times. Yet, according to the 2000 census, people carpooled for only 13.6 % of their trips to work, took transit only four percent of the time, and biked or walked for only three percent of the trips!

Although cars are "cleaner" than in the past, the rapid rise in the number of vehicles on the road creates as much or more pollution as before. Here are some ways that YOU can help clear the air in Central Texas.

- Carpool with other students.
- Ride your bike or walk when possible.
- Take a bus instead of a car.
- Encourage your parents to buy fuel-efficient cars and energy efficient appliances.
- Combine errands into one trip.
- Share what you have learned with your family. Remind them to "tune-up, drive less, and don't idle."
- Park the car and go inside instead of spending all that time idling in the drive through line.

The more people a single gas-powered engine can transport, the better it is for the environment. The number of people traveling in a vehicle divided by the number of vehicles gives us an "Average Vehicle Occupancy" or AVO. According to The Federal Highway Administration, as of 1997 the United States had an AVO of 1.59. This is the same as saying that 159 people are using 100 vehicles to get to their destinations.

$$\frac{159 \text{ people}}{100 \text{ vehicles}} = 1.59 \text{ AVO}$$

Do you think this is higher or lower for Austin? The activity for this lesson will let you and your classmates find the average vehicle occupancy for vehicles around your school!

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1 In 1994, the yearly peak period travel delay per traveler was 31 hours. In 2000, it was 61 hours.

Around Your Home

Reducing car use can have a profound impact on our air quality, but so can small things done around the house. Saving electricity helps save you money, but also means less fuel burned in power plants. Reducing consumption, reusing as many things as you can, and recycling products saves energy and prevents materials from being burned or buried. Tell your parents about the advantages of using an electric lawnmower and weed eater. They have no tailpipe emissions, and if your household subscribes to wind-generated energy from Austin Energy, the electricity used to run them also does not create harmful pollutants.

TERMS

Average Vehicle Occpancy (AVO): The average number of people in one vehicle. The higher the AVO, the more people are using one vehicle to get to the destinations, which improves air quality.

Early Action Compact (EAC): Air quality planning in the Austin region designed to give local flexibility in choosing how to reduce pollution.

Vehicle Miles Traveled (VMT): A measure of how many miles are traveled in vehicles. The more VMTs, the more air pollution in an area.